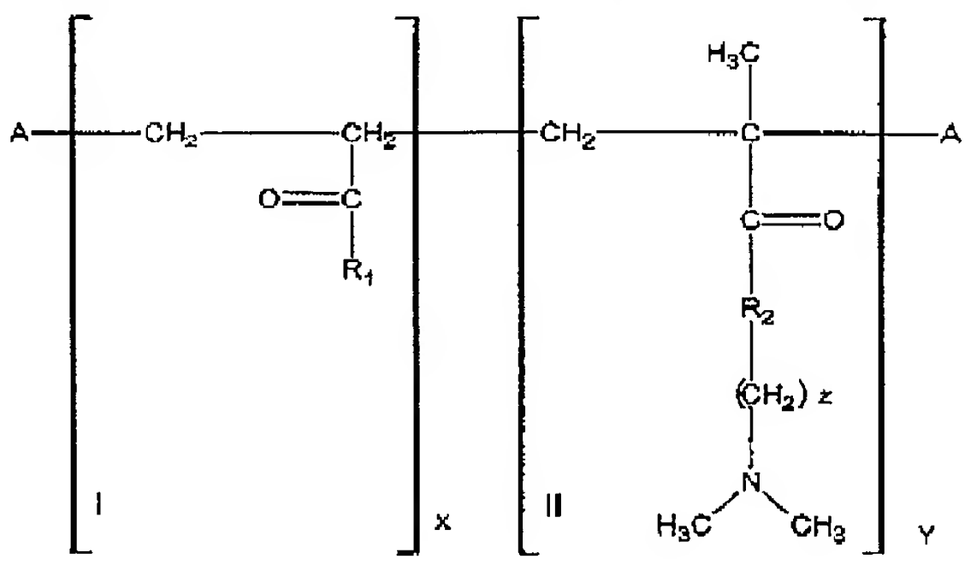
Amendments

CLAIMS

Please amend the claims as indicated below. This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) A copolymer useful for preparing acid gels comprising a copolymer having a copolymer backbone, the copolymer having a general formula:



wherein:

(a) A is an H or other terminating group;

(b) R_1 is an OH or NH_2;

(c) R_2 is an O ~~or NH~~;

(d) Z is an integer having a value of from 1 to 4;

(e) X and Y are present in a ratio (X:Y) of from 3:2 to 4:1;

(f) structures I and II are present as blocks or randomly distributed along the copolymer backbone; and

wherein the copolymer has a molecular weight of from about 1,000,000 to about 10,000,000.

2. (original) The copolymer of Claim 1 wherein R_1 is NH_2.

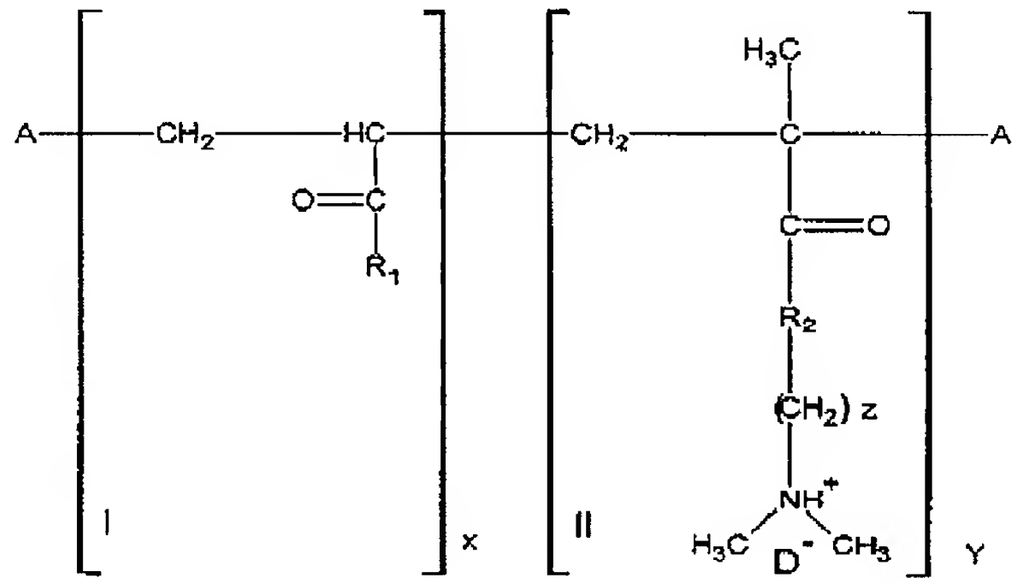
3. Cancelled.

4. (original) The copolymer of Claim 1 wherein Z is an integer having a value of from 2 to 3.

5. (original) The copolymer of Claim 4 wherein Z is an integer having a value of from 2.

6. (original) The copolymer of Claim 5 wherein the copolymer has a molecular weight of from about 1,000,000 to about 6,000,000.

7. (currently amended) A gelled acid comprising an acid gelled using a copolymer having a backbone, the organic component of the gelled acid having the general formula:



wherein:

(a) A is an H or other terminating group;

(b) R_1 is an OH or NH_2;

(c) R_2 is an O or NH;

(d) Z is an integer having a value of from 1 to 4;

(e) X and Y are present in a ratio (X:Y) of from 3:2 to 4:1;

(f) structures I and II are present as blocks or randomly distributed along the copolymer backbone;

(g) D^- is an anion of a mineral acid; and
wherein the ~~gelled acid~~ copolymer has a molecular weight of from about 1,000,000 to about 10,000,000.

8. (original) The geilled acid of Claim 7 wherein the copolymer has a molecular weight of from about 1,000,000 to about 6,000,000.

9. (original) The gelled acid of Claim 7 wherein the mineral acid is selected from the group consisting of sulfuric, nitric, hydrochloric, and phosphoric acid.

10. (original) The gelled acid of Claim 9 wherein the mineral acid is selected from the group consisting of sulfuric and hydrochloric acid.

11. (original) A method for fracturing a subterranean formation, the subterranean formation being in fluid communication with the surface through a well bore, comprising:
(a) creating a fracture in a subterranean formation; and
(b) injecting into the fracture an etching agent, wherein the etching agent includes a gelled acid of claim 7.

12. (original) The method of Claim 11 wherein the etching agent includes additive selected from the group consisting of emulsifiers, chelators, surfactants, proppants, delay additives, biocides, corrosion inhibitors, and mixtures thereof.

13. (original) The method of Claim 11 wherein the etching agent includes a proppant.

14. Cancelled

15. (currently amended) A copolymer formulation useful for preparing copolymers useful for gelling acids comprising:

(a) a first vinyl component selected from the group consisting of acrylamide, acrylic acid, dimethylethyl acrylate, and mixtures thereof; and
(b) a second vinyl component selected from dimethylaminoethyl methacrylate, dimethylaminoethyl methacrylamide, dimethylaminopropyl methacrylamide, and mixtures thereof. and ~~The copolymer formulation of Claim 14~~ additionally comprising a crosslinking agent.

16. (original) The copolymer formulation of Claim 15 wherein the crosslinking agent is bis-acrylamide

17. (original) The copolymer formulation of Claim 16 wherein the bis-acrylamide is present in a concentration of less than about 250 parts per million.

18. (original) The copolymer formulation of Claim 16 wherein the bis-acrylamide is present in a concentration of less than about 200 parts per million.

19. (original) The copolymer formulation of Claim 16 wherein the bis-acrylamide is present in a concentration of less than about 100 parts per million.

20. (withdrawn) In a method for preparing an acid gel including admixing an vinyl compound having an amine group with an acid to form a salt and polymerizing the salt in the presence of another different vinyl compound to form a copolymer, the improvement comprising selecting as the vinyl compound having an amine group only such vinyl compounds having an amine group as will form an amine salt with the acid.